

An Advanced Rapid Cycling CO₂ and H₂O Control System for PLSS, Phase II

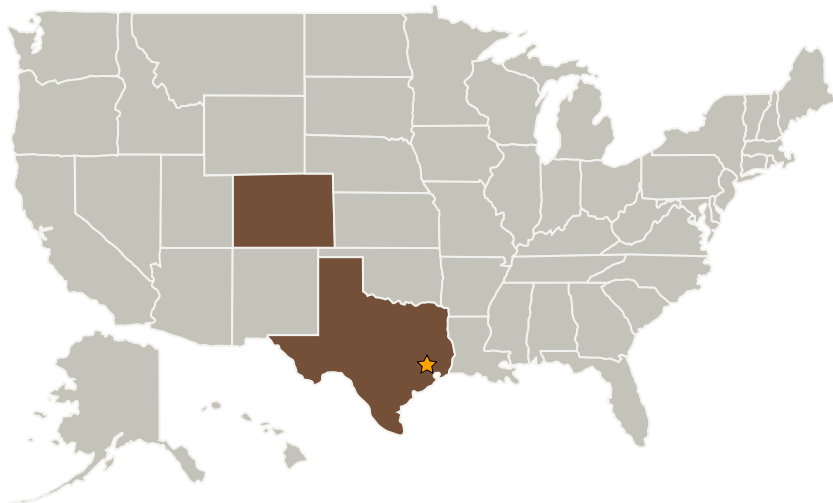
Completed Technology Project (2005 - 2007)



Project Introduction

NASA's planned future missions set stringent demands on the design of the Portable Life Support Systems (PLSS), requiring dramatic reductions in weight, decreased reliance on supplies and greater flexibility on the types of missions. The CO₂ and humidity control unit in the existing PLSS design is relatively large, since it has to remove 8 hours worth of CO₂. If the sorbent regeneration can be carried out during the extravehicular activity (EVA) with a relatively high regeneration frequency, the size of the sorbent canister and weight can be significantly reduced. TDA Research, Inc. (TDA) proposes to develop a compact, regenerable sorbent-based system to control CO₂ and humidity in the space suit ventilation loop. The sorbent can be regenerated using space vacuum during the EVA, eliminating all duration-limiting elements in the life support system.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
TDA Research, Inc.	Supporting Organization	Industry	Wheat Ridge, Colorado



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

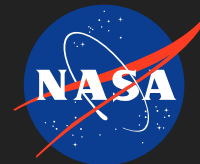
Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Colorado

Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.2 Extravehicular Activity Systems
 - └ TX06.2.2 Portable Life Support System